REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. Claims 36, 40-41, 47-51, 55-56, 58-59, 62-63, and 65 have been amended. Claims 66-68 have been added. Applicant respectfully submits that no new matter has been added by way of the amendments. Claims 36-68 are pending in this application.

I. Allowance of Claims 40, 41, 43-47, 55, 56, 58, 62, 63, and 65

In section 5 of the Office Action, Claims 40, 41, 43-47, 55, 56, 58, 62, 63, and 65 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant thanks the Examiner for recognizing that Claims 40, 41, 43-47, 55, 56, 58, 62, 63, and 65 are allowable over the cited art. However, Applicant believes that the remaining claims are also allowable over the cited art as discussed below. Thus, Claims 40, 41, 43-47, 55, 56, 58, 62, 63, and 65 have not been rewritten in independent form including all of the limitations of the base claim and any intervening claims.

II. Rejection of Claims 36-39, 42, 48, 49, 51-54, 57, 59-61, and 64 Under 35 U.S.C. § 103(a)

In section 3 of the Office Action, Claims 36-39, 42, 48, 49, 51-54, 57, 59-61, and 64 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2003/0202468 to Cain *et al.* (*Cain*) in view of U.S. Patent Publication No. 2003/0202477 to Zhen *et al.* (*Zhen*). Applicant respectfully traverses the rejection. Applicant respectfully submits that *Cain* and *Zhen*, alone and in combination, fail to teach, suggest, or describe all of the features recited in at least independent Claims 36, 51, and 59 and dependent Claims 37, 38, 42, 52, 53, 57, 60, and 64.

A. Rejection of Claims 36, 51, and 59

Independent Claim 36 recites in part:

> receiving a connectivity metric for each of a plurality of links defining each of a plurality of routes that connect a start node

> with an end node, ... wherein the received connectivity metric for a link of the plurality of links is determined based on the first type of node and the second type of node;

(Underlining added). Independent Claims 51 and 59, though of different scope, recite similar elements.

On page 3 of the Office Action, the Examiner conceded that "*Cain* et al do not disclose wherein the calculated connectivity metric for a link of the plurality of links is determined based on the first type of node and the second type of node." However, on page 3 of the Office Action, the Examiner asserted:

> Zhen et al disclose a method in Figures 3 and 6 of determining a best route in a Bluetooth network. ... In the path discovery process, it is "very important to determine when, and which node becomes the master or the slave, or which type of joint node exists on the route between the source and the destination" (Section 0042, lines 16-18). In determining the best path, it is better to use a path with less joint nodes because if a network is formed using the minimum number of piconets, inter-piconet interference, packet scheduling with adjacent piconets and inter-packet collision decreases. This result in easier network maintenance, cheaper costs, broader bandwidth and less battery power consumption. Refer to Sections 0048, 0052 and 0135. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the calculated connectivity metric for a link of the plurality of links is determined based on the first type of node and the second type of node.

Applicant respectfully disagrees with the Examiner's characterization of *Zhen*.

Paragraph [0042] of *Zhen* states:

> A plurality of paths may exist between two nodes, and, to select the path and route among them is the main purpose of the routing algorithm-defined profile. Here, a `path` denotes all the network connections between two nodes, while a `route` denotes one path selected by the routing protocol for packet transmission. Of course, the routing algorithm-defined profiles can help in the establishment of a network. Well known for this purpose is the "route discovery" of the on-demand MANET routing algorithm. Multicasting and QoS (Quality of Service)

> guarantee are also made on the routing protocol. Meanwhile, it is the purpose of network formation to perform better packet transmission at the level of the Bluetooth physical layer and data link by re-arranging the routes selected for all nodes. The emphasis is on the "better quality" network. It is therefore very important to determine when, and which node becomes the master or the slave, or which type of joint node exists on the route between the source and the destination.

(Underlining added). Therefore, *Zhen* mentions a MANET routing algorithm and that it is important to determine when and which type of node each node becomes in the network. Paragraph [0023] of *Zhen* further states:

> [T]he communication method according to the present invention includes the steps of forming a network that comprises a plurality of piconets comprising a slave node operating as a slave in only one piconet, a master node operating as a master in only one piconet, a slave-slave joint node operating as a slave in two piconets, and a master-slave joint node operating as a slave in one piconet while operating as a master in another piconet, and at least two piconets are connected by the slave-slave joint node; and, with a reception of the routing trigger at the joint node, the joint node bridging the piconets belonging to the formed network.

(Underlining added). Thus, again *Zhen* recognizes that there are different types of nodes in a network. *Zhen* further states:

> In the routing protocol, with the reception of the RREQ message with respect to the destination, the node that has enough routes to satisfy the request and is itself a destination generates a RREP message. **Along the forward path**, all the intermediate nodes are M-S joint nodes.
>
> RREP message is a routing trigger that initiates stopping of inquiry in process, and **re-forming of the network along the backward path** and the subsequent reduction of existing piconets.
>
> Meanwhile, the RREP packet is a routing trigger that initiates a master-slave switch and subsequent interleaving of an S-S joint node between the master nodes.

> The main principle of the network reformation is about the interleaving of available S-S joint nodes between the master nodes. The interleaving minimizes the number of piconets.
>
> ...
>
> The start node operates as a master, and the end node operates as a slave.
>
> The networking application profile may have a high priority to determine roles of the nodes. Master-slave switch only occurs between even-number spaced nodes and the next hop nodes.

(Paras. [0087]-[0093]; underlining and bolding added). Thus, *Zhen* describes a routing protocol that determines separate forward and reverse paths. The reverse path is determined by reforming the network to reduce the number of piconets by performing a "master-slave switch and subsequent interleaving of an S-S joint node between the master nodes." *Zhen* further states that the "process repeats until the destination is found, or id of maximum hop number is reached" indicating possible use of a hop count. (Para. [0130]). However, though *Zhen* recognizes different types of nodes in a network, *Zhen* fails to disclose any "connectivity metric ... determined based on the first type of node and the second type of node" as recited in Claims 36, 51, and 59. *Zhen* instead reforms the network to change the type for each node in the network in determining the reverse path. Therefore, *Zhen* fails to teach, suggest, or describe "wherein the received connectivity metric for a link of the plurality of links is determined based on the first type of node and the second type of node" as recited in Claims 36, 51, and 59.

For at least these reasons, Applicant respectfully submits that *Cain* and *Zhen*, alone and in combination, fail to disclose, teach, or suggest each and every element of the claims. The remaining claims depend from one of Claims 36, 51, or 59. Therefore, Applicant respectfully requests withdrawal of the rejection of Claims 36-38, 42, 48, 49, 51-53, 57, 59, 60, and 64.

B. Rejection of Claims 37, 38, 52, 53, and 60

Claims 37, 38, 52, 53, and 60 recite "the connectivity metric is a number of slave nodes in the sub-network." On page 4 of the Office Action, the Examiner concedes that

"*Cain* et al do not disclose wherein, if the first/second node is the first/second master node in a sub-network of the communication network and the second/first node is the second/first slave node in the sub-network, the connectivity metric is a number of slave nodes in the sub-network." However, on page 4, the Examiner stated:

> Zhen et al disclose that a master node searches for slave nodes until N (N>=7) slave nodes are found. Refer to Sections 0078, 0079 and 0115. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein, if the first/second node is the first/second master node in a sub-network of the communication network and the second/first node is the second/first salve node in the sub-network, the connectivity metric is a number of slave nodes in the sub-network. One would have been motivated to do so since the number of slave nodes affects how many paths can be found to reach a destination.

Applicant respectfully disagrees with the Examiner's interpretation of *Zhen*.

Paragraphs [0078]-[0079] of *Zhen* cited by the Examiner state:

> For the node, the RREQ message is the "routing trigger" that initiates the inquiry in the base band **except for** the following four cases.
>
> 1. When N (N<=7) of active slaves are pre-connected with respect to the master node

(Underlining and bolding added). Paragraph [0115] of *Zhen* cited by the Examiner further states:

> The master node 51 regularly enters the Inquiry state to find a free node within the range until N (N<=7) active slaves are found. The master node 51 also enters the Inquiry Scan state regularly. This is to enable another master node in the radio range to find the master node.

(Underlining added). As such, *Zhen* discloses that a master node enters an "Inquiry state to find a free node" until N<=7 active slaves are found. Determining whether or not to enter an "Inquiry state" has nothing to do with a connectivity metric. Therefore, *Zhen* fails to disclose any kind of connectivity metric that is a number of slave nodes. Accordingly, Applicant

respectfully submits that it would not have been obvious to one of skill in the art to use a number of slave nodes as a connectivity metric.

For at least these reasons, Applicant respectfully submits that *Cain* and *Zhen*, alone and in combination, fail to teach, suggest, or disclose all of the elements of Claims 37, 38, 52, 53, and 60. As a result, Applicant respectfully requests withdrawal of the rejection of Claims 37, 38, 52, 53, and 60 for this additional reason.

C. Rejection of Claims 42, 57, and 64

Claims 42, 57, and 64 recite "determining the total connectivity metric of a route of the plurality of routes comprises identifying a maximum connectivity metric of the plurality of links defining the route." On page 6 of the Office Action, the Examiner states:

> Referring to claims 42, 57 and 64, Cain et al disclose wherein determining the total connectivity metric of a route of the plurality of routes comprises identifying a maximum connectivity metric of the plurality of links defining the route. Based on the parameters of Table 1 (Section 0048), the QoS metrics is calculated for each potential route. Each node metric form is given by $m_N=(C_{N1}, C_{N2}, C_{N3}, \ldots)$ wherein C_{Ni} is the ith component of the node metric vector and a link metric form is given by $m_L = (C_{L1}, C_{L2}, C_{L3}, \ldots)$ wherein C_{Li} is the ith component of the link metric vector. ... Link and node metric weight vectors are then added to the vector m_P to emphasize certain components. Although not specifically disclosed, this process involves identifying a maximum connectivity metric of the plurality of links since after adding the weighting value to each link/node metric, the system can put more emphasis on certain metrics and identify the maximum metric. Refer to sections 0053-0054.

(Underlining added). Applicant respectfully disagrees. The Examiner concedes that *Cain* fails to specifically disclose "identifying a maximum connectivity metric of the plurality of links." However, the Examiner asserts that Claims 42, 47 and 64 are disclosed because "after adding the weighting value to each link/node metric, the system can put more emphasis on certain metrics and identify the maximum metric." Essentially the Examiner is asserting that the claim element is not disclosed in *Cain*, but it would have been possible to modify the reference to disclose such an element. As such, Applicant respectfully asserts that the

Examiner is applying improper hindsight based on the disclosure of the present application by reading into *Cain* an aspect which is not otherwise disclosed in *Cain*.

Paragraphs [0053]-[0054] of *Cain* state:

> For the following examples, link metric vectors m_L and node metric vectors m_N, are defined, each of which is an important characteristic in evaluating routes to meet various QoS needs in network organization. Further, a node metric form is given by $m_N = (C_{N1}, C_{N2}, C_{N3}, \ldots)$ where C_{Ni} is the i^{th} component of the node metric vector, and a link metric form is given by $m_L = (C_{L1}, C_{L2}, C_{L3}, \ldots)$, where C_{Li} is the i^{th} component of the link metric vector. As will be appreciated by those of skill in the art, link and node metric vectors can be passed over the network 20 in network control packets, for example.
>
> A raw path metric for a route from a source node 1 to destination node k+1 can be represented as the vector of node and link metric vectors $m_P = (m_{L1}, m_{N2}, m_{L2}, \ldots, m_{L(k-1)}, m_{Nk}, m_{Lk})$ along the path or potential route. As noted above, the metric components that are key in a given application are ranked, and then the link w_L and node w_N metric weighting vectors may be defined. These metric vectors may include both zero and nonzero components to provide the desired emphasis in a given application, as will be appreciated by those of skill in the art. A final path metric may be a scalar evaluated as function of the raw path metric vector and the node and link weighting vectors, which is given by $m_P = F(w_N, w_L, m_P)$. Paths or routes are preferably selected based upon the best value of the final path metric m_P, and the form of the function F( ) used to be used will of course depend upon the particular application (e.g., QoS delay path, QoS capacity allocation, best effort, etc.).

(Underlining added). Thus, *Cain* discloses that metrics may be emphasized using the weighting vectors, however nowhere does *Cain* teach or even suggest "identifying a maximum connectivity metric of the plurality of links defining the route."

Accordingly, Applicant respectfully submits that *Cain* and *Zhen*, alone and in combination, fail to teach, suggest, or disclose all of the elements of Claims 42, 57, and 64. As a result, Applicant respectfully requests withdrawal of the rejection of Claims 42, 57, and 64 for this additional reason.

III. Rejection of Claim 50 Under 35 U.S.C. § 103(a)

In section 4 of the Office Action, Claim 50 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Cain* in view of *Zhen* and further in view of U.S. Patent Publication No. 2005/0226265 to Takatori (*Takatori*). For at least the reasons discussed in Section II. above, Applicant respectfully submits that *Cain* and *Zhen*, alone and in combination, fail to teach, suggest, or describe all of the elements of Claim 36 from which Claim 50 depends.

Takatori states:

> According to the first mode of the present invention, the inter-ring connection device can determine a transfer route by judging which ring, the physical ring or the virtual ring, the data to be transferred across between the rings is transferred within. Moreover, when determining this transfer route, it is possible to determine the transfer route taking account of the hop count up to the transfer destination, the total sum of the cost values up to the transfer destination and the congested state of the station existing on the transfer route.

(Para. [0027]). *Takatori*, however, fails to teach, suggest, or describe "calculating a connectivity metric for a plurality of links defining each of a plurality of routes that connect a start node with an end node, ... determined based on the first type of node and the second type of node" as recited in Claim 36.

Thus, neither *Cain*, *Zhen*, nor *Takatori* teach, suggest, or describe "receiving a connectivity metric for each of a plurality of links defining each of a plurality of routes that connect a start node with an end node, ... determined based on the first type of node and the second type of node" as recited in Claim 36. As a result, Applicant respectfully requests withdrawal of the rejection of Claim 50 which depends from Claim 36.

IV. New Claims 66-68

New Claims 66-68 have been added to depend from Claims 36, 51, and 59, respectively. Therefore, for at least the reasons discussed in Sections II. and III. above, Applicant respectfully submits that Claims 66-68 are allowable over the cited art.

Applicant believes that the present application is in condition for allowance. Favorable reconsideration of the application is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date June 10, 2009

By 

FOLEY & LARDNER LLP
Customer Number: 23524
Telephone: (608) 258-4263
Facsimile: (608) 258-4258

Callie M. Bell
Attorney for Applicant
Registration No. 54,989